

SEP 3 1971

J. G. Keppler, Chief, Reactor Testing & Operations Br.
Division of Compliance, HQ

EVALUATION MEMORANDUM
JERSEY CENTRAL POWER & LIGHT COMPANY (OYSTER CREEK 1)
BUCKET NO. 30-219

The attached report of inspections conducted at the subject facility on June 23 - 25, 1971 and at JCP&L's home office in Parsippany, New Jersey on July 2, 1971 is forwarded for information. Two items of noncompliance were identified.

Specific matters of interest discussed in this report include the following:

1. The correction to calendar year 1970 liquid radioactive effluents discharged from the facility.
2. The cause (an overstress condition) for the linkage failure in the turbine initial pressure regulator controls.
3. The commitment of JCP&L to provide double automatic closing isolation valves in the containment O₂ sampling lines (both drywell and torus). Other GE facilities, not in Region I, should be reviewed to insure that they do not have an unsatisfactory installation.
4. The installation of the jockey pump in one of the core spray loops. The licensee reported that the second jockey pump has been installed for the other core spray loop and the reported "water hammer problem following core spray pump starts has been virtually eliminated.
5. The testing of diesel generator shutdown devices.
6. The licensee's method for accounting for gaseous releases from the facility.
7. The increase in effectiveness of the waste treatment facility.

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| SURNAME ▶ | Carlson:smg | | | | |
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8. The development of a periodic schedule to calibrate or trip check the balance of plant instrumentation.
9. The partial pluggage of the condenser inlet structure.

R. T. Carlson
Senior Reactor Inspector

Enclosure:
CO Rpt 71-02 dated 9/2/71
by R. J. McDermott

cc: E. G. Case, DRS (3)
R. S. Boyd, DRL (2)
R. C. DeYoung, DEL (2)
D. J. Skovholt, DEL (3)
H. R. Denton, DRS (2)
A. Giambusso, CO
L. Kornblith, CO
R. H. Engelken, CO
Regional Directors, CO
DR Central Files

U. S. ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE

REGION I

INSPECTION REPORT

CO Report No.: 50-219/71-02

Subject: Jersey Central Power & Light Co.

License No.: DPR-16

Oyster Creek 1

Priority: -

Location: Forked River, N. J.

Category: C

Type of Licensee: Boiling Water Reactor

Type of Inspection: Routine, Announced

Dates of Inspection: June 22 - 25 and July 2, 1971

Dates of Previous Inspection: April 6 - 8, 12, 13, 1971

Principal Inspector: *W. H. Baunack*
R. J. McDermott

9/2/71
Date

Accompanying Inspectors: *R. L. Spurd*
L. B. Higginbotham (6/22 - 24/71)

9/2/71
Date

R. L. Spurd
F. S. Cantrell (6/23 - 25; 7/2/71)

9/2/71
Date

R. L. Spurd
T. Young (6/23 - 25/71)

9/2/71
Date

R. L. Spurd
R. T. Carlson (7/2/71)

9/2/71
Date

Other Accompanying Personnel: None

Reviewed by: *J. Carlson*
R. T. Carlson *R. L. Spurd*

9/2/71
Date

Proprietary Information: None

SECTION I

Enforcement Action

- A. Technical Specification 3.1, Table 3.1.1, Items A.7 and B.6 - The trip point of the radiation monitor in the main steam line tunnel was set at 10 times the allowable limit. (Paragraph 12)
- B. Technical Specification 6.1.C.2.d.(5) - Failure of the General Office Review Board to investigate a reported instance of a violation of a Technical Specification, which is discussed in item A above, and to make recommendations to prevent a recurrence to the Company President. (Paragraph 12)

Licensee Action on Previously Identified Enforcement Matters

A formal enforcement letter was sent to the licensee from CO:HQ identifying three items of noncompliance with regulatory requirements pertaining to the release and storage of liquid radioactive wastes and two other issues involving variances in the operation of the facility from information presented in the FD&SAR. JCP&L has not yet responded to this letter, but a review of information at the site during this inspection disclosed the following information:

- A. Due to a procedural error in the counting and analysis of liquid radioactive wastes, it appeared that the total radioactivity released from the facility during calendar year 1970 had been underestimated. During this inspection it was verified that corrective action has been taken to eliminate the procedural error and to preclude recurrence. JCP&L has corrected their analysis of the total radioactivity released during 1970 and plans to report corrected values in their next semi-annual report to the AEC. (Paragraph 21)
- B. The same procedural error in counting and analysis of radioactive wastes also caused JCP&L to exceed the Technical Specification limit for the total activity contained in outside waste storage tanks. Corrective action taken by the licensee to prevent recurrence was reviewed during this inspection. (Paragraph 22)

Unresolved Items

- A. Drywell Compressed Nitrogen System - Jersey Central has agreed to perform a review of this system, before placing the system in service, to determine if contaminants or particulate matter can enter the instrument air system loads within the dry well. (Paragraph 18)

- B. Reactor Vessel Level Instruments - Jersey Central has agreed to perform a review of the adequacy of the reference legs used for this instrumentation. (Paragraph 20)

Status of Previously Reported Unresolved Items

- A. Performance of the General Office Review Board - Review disclosed that the General Office Review Board is meeting the Technical Specification requirements in their review and audit of plant operations. (Paragraph 14)
- B. Maintenance Group Activities - Review disclosed that improvements have been made in the administration of the maintenance group activities. The licensee has plans to assign a full-time engineer to the maintenance group. (Paragraph 15)
- C. 45% Bypass Device for Turbine Scrams - Review disclosed that the licensee is periodically testing the pressure switches which provide the bypass function for the turbine scrams. GE has not yet provided the licensee with the necessary documentation to establish the basis for the pressure switch setting. (Paragraph 16)
- D. Linkage Failure in the Turbine Initial Pressure Regulator Controls - Review of information at the site disclosed that the cause for the failure of the linkage was attributed to an overstress condition. (Paragraph 17)
- E. Containment Isolation Valves for the Drywell and Torus Oxygen Sampling Lines - JCP&L plans to install double isolation valves in both the drywell and the torus oxygen sampling lines. This modification is scheduled to be completed prior to the September, 1971 refueling outage. (Paragraph 13)
- F. Core Spray System Water Hammer - JCP&L has installed a jockey pump (to keep the piping system filled) in one of the core spray loops and plans to install a jockey pump in the second core spray loop by mid-July, 1971. The installation of the jockey pump in the one core spray loop has significantly reduced the water hammer condition. (Paragraph 11)
- G. Reactor Vessel Level Instrumentation - JCP&L is continuing their review of this matter.
- H. Emergency Power - Review of records disclosed that the station has successfully conducted load discharge tests for both the 125 volt station batteries and for the diesel generator starting batteries. (Paragraph 10)

- A. The compressed nitrogen system which will supply the instrument air loads within containment - Mr. McCluskey agreed to perform a review, before placing the system in operation, to determine if contaminants or particulate matter could enter the system. (Paragraph 18)
- B. Core Spray System - Mr. McCluskey stated that the second jockey pump would be added to the core spray system within approximately two weeks (by mid-July, 1971). (Paragraph 11)
- C. Reactor Vessel Level Instrumentation - Mr. McCluskey agreed to further review the adequacy of the presently installed reactor vessel level instrument sensing legs. (Paragraph 20)

An exit interview was also held at the conclusion of the Parsippany, N. J. inspection on July 2, 1971 with Mr. I. Finrock, Jr. and a followup telecon was held with Mr. W. Hirst on July 6, 1971. The issue discussed at this exit interview was as follows:

Item of noncompliance with the Technical Specifications involving the failure of the General Office Review Board to investigate a reported instance of noncompliance (incorrectly set trip point for the radiation monitor in the main steam line tunnel) with the Technical Specifications and to make recommendations to prevent recurrence to the Company President. Mr. Hirst stated that a written report would be submitted by the GORB on this issue to the JCP&L president.

- I. Testing of Diesel Generator Shutdown Devices - JCP&L has developed a plan to test the diesel generator shutdown devices. No testing has been accomplished to date. (Paragraph 24)
- J. Gaseous Releases - JCP&L has reviewed their method of accounting for gaseous releases from the facility and does not consider that there was any significant error in their calculation of calendar year 1970 releases. (Paragraph 25)
- K. Liquid Radioactive Waste System - Review of records during this inspection disclosed that JCP&L began improving the effectiveness of the waste treatment system in November, 1970. Efforts by the licensee to further reduce quantities of liquid effluents released are continuing. (Paragraph 23)
- L. Balance of Plant Instrumentation - JCP&L has developed a program to periodically calibrate and trip check the balance-of-plant instrumentation. (Paragraph 9)

Unusual Occurrence

Partial Loss of Circulating Water Supply - Sea grass partially plugged the trash racks at the intake structure for the main circulating water system during plant operation and one (of four) main circulating pump was manually shutdown. (Paragraph 19)

Persons Contacted

Mr. T. McCluskey, Station Superintendent
Mr. D. Ross, Technical Supervisor
Mr. J. Carroll, Operations Supervisor
Mr. D. Reeves, Technical Engineer
Mr. E. Riggle, Maintenance Supervisor
Mr. J. Sullivan, Assistant Technical Engineer
Mr. D. Kaulback, Radiation Protection Supervisor
Mr. F. Kossatz, Mechanical Foreman
Mr. R. Pelrine, Chemical Supervisor
Mr. T. Johnson, Electrical Foreman
Mr. I. Finfrock, Jr., Manager, Nuclear Generating Stations
Mr. W. Hirst, Chairman, General Office Review Board
Mr. T. Crimmins, Secretary, General Office Review Board
Mr. T. Hetrick, Vice Chairman, General Office Review Board

Management Interview

A management interview was conducted at the conclusion of the site inspection on June 25, 1971 with Mr. T. McCluskey and other members of his staff. Items discussed at this management interview were as follows:

SECTION II

Additional Subjects Inspected, Not Identified in Section I, Where No Deficiencies or Unresolved Items were Found

1. General

Since the last routine inspection in April, 1971, the plant has continued to operate at or near 100% of licensed power (1690 MWt). No plant shutdowns have been experienced during this period. JCP&L plans a six week outage in September - October, 1971 to remove poison curtains. Attempts will be made by JCP&L to obtain replacement fuel elements and there are tentative plans to in-core "sip" all fuel assemblies during this outage.

2. Logs and Records

- a. General Office Review Board meeting minutes for the period of October, 1970 to June, 1971.
- b. Plant Operating Review Committee meeting minutes for the period of October, 1970 to June, 1971.
- c. General Office Review Board Audit Reports for the period of October, 1970 to June, 1971.

3. Facility Staffing and Operator Retraining Programs

- a. Status of present site organization.
- b. Operator retraining performed since early 1970.

4. Reactivity Control and Core Physics

- a. Testing of interlocks and bypass devices in reactor protection systems and engineered safeguards systems.
- b. Control rod performance.
- c. Nuclear instrumentation.
- d. Failure of the high drywell pressure sensor during surveillance testing.

5. Compressed Air Systems

A review was made of the operational checks and preventive maintenance being performed on these systems.

6. Radiation Protection

- a. Personnel Monitoring Records, January 1970 - March, 1971.
- b. Survey Records, January - April, 1971.

7. Radioactive Waste Systems

- a. Logs and records, January, 1970 - May, 1971.
- b. Procedures for counting and analysis.

8. Environmental Monitoring

- a. Records for January, 1970 - December, 1970.

Details of Subjects Discussed in Section I

9. Balance of Plant Instrumentation

The inspector's review during the April, 1971 inspection disclosed that there was no established periodic schedule to calibrate or trip check instrumentation which monitors variables that have Technical Specification limits or instrumentation associated with safeguards equipment. The instrumentation involved in the above categories is exclusive of that which is specifically required to be periodically trip checked and/or calibrated by Technical Specifications surveillance requirements. Mr. Riggle informed the inspectors during this inspection that a review of Technical Specification limits and plant instrumentation had been conducted by the plant staff and that a periodic schedule had been developed for the calibration and trip checking of important instruments. JCP&L has implemented this program since the last routine inspection.

10. Emergency Power

A review of site records disclosed that a successful load discharge test had been conducted on 125 volt station batteries since the April, 1971 inspection. Review also disclosed that successful load discharge tests had been performed for the diesel generator starting batteries in June, 1971.

11. Core Spray System

Discussions were held with Messrs. Carroll and Sullivan and the following information was provided:

- a. A jockey pump was installed for one core spray loop (pumps B and D) on May 17, 1971. The piping modifications were made in accordance with ASA B31.7-1969 using qualified welders, qualified weld procedures and qualified NDT procedures. A hydrostatic test was performed at 375 psig (10 minutes) following the installation.
- b. The installed jockey pump has a flow rating of 10 gpm at 142 foot discharge head and a shutoff head of 150 foot. The pump is powered from a single non-vital power source. JCP&L has no current intention of incorporating any requirement for the use of this pump in the Technical Specifications.
- c. Mr. Carroll stated that the installation of the jockey pump has virtually eliminated all "water hammer" that previously resulted from core spray pump starts. The inspectors witnessed the startup of one of the core spray pumps and booster pumps in this loop and did not observe any "water hammer" of significance. Mr. McCluskey informed the inspectors during the exit interview that Mr. G. Lary of Burns & Roe (Supervisor of the Burns & Roe group performing the stress analysis of the core spray piping) had visited the facility to witness the effect on system operations of the jockey pump installation.
- d. Messrs. Sullivan and Carroll stated that NDT inspection (LP and hardness test) of high stress areas (disclosed by the Burns & Roe stress analysis) had been performed by Mr. N. Goodenough, GPU Quality Assurance Group and also by site personnel, and that nothing unusual was noted in this inspection.
- e. The inspectors witnessed the startup of one core spray and one booster pump in the A&C core spray loop and noted pipe movements of one to two inches in the vertical run of pipe in the vicinity of the booster pumps. During the exit interview, Mr. McCluskey and Mr. Sullivan stated that they expected that the jockey pump would be installed in this loop in approximately two weeks. JCP&L also plans to install a high point vent connection in this loop at the same time that the jockey pump is installed. It was stated, during the exit interview, that this modification should be completed before another monthly surveillance pump start was required.

During the exit interview the inspectors asked what JCP&L's plans were in regard to determining the adequacy of the jockey pumps to limit stress levels to acceptable values. Specifically, the inspectors asked if any quantitative motion measurements would be taken on the piping following the installation of the jockey pumps. Mr. McCluskey thought that this was part of the program for resolution of the water hammer problem. The inspector also asked if JCP&L planned to look further (beyond pipe stresses) to determine if damage had occurred to other parts of the core spray system such as valves and instrumentation. Mr. McCluskey stated that the core spray pump discharge check valves were scheduled to be inspected during the September - October, 1971 outage and that he thought that an inspection for possible damage to instrumentation was included in the program for the final resolution of the "water hammer" problem. Mr. McCluskey stated, in summary, that JCP&L will consider other possible damage that may have occurred due to "water hammer".

At the time of the last inspection (April, 1971) the assigned inspector discussed with Mr. McCluskey during the exit interview that Compliance would closely follow the progress JCP&L was making in resolving the "water hammer" problem. Following the inspection, Mr. McCluskey was contacted by telephone on May 13, 1971 and informed that it was the inspector's position that, if the stress analysis by Burns & Roe showed excessive stress levels or if the planned NDT inspection disclosed problems, JCP&L should consider the reportability aspects. The inspector also requested JCP&L to provide an information report to DRL even if no serious problems were noted in the review of stress levels or NDT inspection. No commitment was obtained from Mr. McCluskey on these issues.

At the conclusion of the ACRS subcommittee meeting at the facility on May 25, 1971, the inspector was informed by Mr. Don Rees, GPU, and Mr. G. Lary, Burns & Roe, that the preliminary stress analysis performed by Burns & Roe had shown stress levels in the core spray piping had exceeded allowable code limits. The inspector discussed this information with Mr. T. McCluskey before exiting from the site and stated again that JCP&L should consider a report to DRL in view of the stresses exceeding allowable limits. Mr. McCluskey stated at that time he would review the matter.

Mr. McCluskey was again contacted on June 11 and June 18, 1971 and asked when the report would be submitted. He stated during the last contact that the matter was being reviewed by JCP&L management. Mr. Finrock was contacted by the assigned inspector on June 21, 1971 and asked for JCP&L's position in regard to reporting the preliminary results of the stress analysis and their planned program for resolving the "water hammer" problem. He stated (after a telecon with DRL) that a written report would be submitted and that he thought the report would be submitted by June 25, 1971.

12. GORB Performance in Investigating a Reported Instance of a Violation of Technical Specifications (Item of Noncompliance)

The inspector's review of a GORB audit report for an audit conducted October 15, 1970 disclosed that the audit had detected that the set point of the high radiation instrument in the main steam line tunnel was set at 10^4 units. This instrument should have been set at 10^3 units which would be equal to 10 times background radiation level of 10^2 units. Technical Specifications (Table 3.1.1, Items A.7 and B.6) require this instrument trip point to be set at less than or equal to 10 times background. A review of the GORB correspondence file and discussions with Mr. W. Hirst disclosed that GORB had not investigated this matter nor had they communicated with the Company President on this violation of Technical Specifications, as required by Section 6.1.C.2.d.(5). Mr. Hirst committed to inform Mr. Bovie, JCP&L President, that the GORB had been remiss in not reporting on this issue and he further stated that he would have all future audit reports reviewed to identify items of noncompliance with Technical Specifications and Regulatory requirements.

The October 15 audit report documented that corrective action had been taken to reset the instrument trip at less than or equal to 10 times background radiation.

13. Containment Oxygen Sampling Lines

JCP&L experienced an unsuccessful containment integrated leak rate test in October, 1970. The test was successfully completed after manually valving out the O₂ sampling line for the drywell. It was noted that the single automatic closing isolation valve for this line had closed but that the valve design (large tolerances in the valve internals) permitted approximately 180 SCFH leakage through the closed valve. At that time, the installed valves in both the drywell and torus O₂ sample lines (manufactured by Valcor Engineering Corporation, Model 17C89C9-5 designed for 125 psig) were replaced with valves of a new design (manufactured by Versa, Model 31BV5R).

During the exit interview the inspector pointed out that no permanent corrective action had been taken to install a second redundant isolation valve (as is stated in Amendment No. 15 to the application for this class of containment penetration) even though the failure was identified many months ago. After further discussion, Mr. McCluskey stated that, as a minimum, double automatic closing isolation valves would be installed prior to the September - October, 1971 outage. He expected that this modification could be made much sooner than the September, 1971 date.

14. Performance of the General Office Review Board

Discussions were held with Messrs. Hirst, Hetrick and Crimmins and a review was made of GORB meeting minutes, GORB audit reports, GORB action items list, GORB audit plans, and GORB correspondence with JCP&L President Bovie. Significant inspection findings were as follows:

- a. Since the October, 1970 special inspection, there have been seven GORB meetings. Attendance at these meetings by GORB members was in accordance with the Technical Specification requirements for a quorum.
- b. GORB has developed a system (action items list) to permit followup on issues identified by GORB that require resolution. The current action items list included 28 outstanding items of 63 items developed by GORB since January 16, 1969. The action items list also disclosed that approximately 20 outstanding items have been resolved since January 1, 1971.
- c. Mr. Crimmins stated that all GORB members are now routinely supplied copies of; (1) abnormal occurrence reports, (2) scram reports, (3) information and documentation to resolve outstanding action item issues, and (4) PORC meeting minutes.
- d. The qualifications of the GORB with regard to the combined experience and technical specialties of the individual members was found to be in accordance with the Technical Specification requirements. This was determined by the inspector's review of the resumes' of GORB members.
- e. Periodic audits of plant operations have been conducted quarterly as required by the Technical Specifications. Three such audits have been conducted since October 15, 1970.

15. Maintenance Group Activities

Discussions were held with Messrs. Finfrock, McCluskey and Riggle and a review was made of work orders and records of equipment performance.

Mr. McCluskey stated that steps have been taken since the October, 1970 special inspection to strengthen or improve the administrative aspects of maintenance activities at the facility. He stated that he now personally followed maintenance activities more closely than he did previously. Mr. Finfrock stated that there were plans to assign an engineer to the maintenance group on a full time basis before the end of calendar year 1971. Mr. Riggle stated that there was an engineer currently assigned part time to the maintenance group to review QA/QC aspects of maintenance activities.

A review was made of records provided by Mr. Riggle that permit him to make an evaluation of equipment performance to detect long term trends. The records consisted of a listing of work orders submitted noting the date submitted, a brief description of the problems, equipment involved, and the date corrective action was completed. Purchase of replacement or spare parts for all maintenance activities at the OC-1 facility requires Mr. Riggle's and Mr. McCluskey's prior approval.

16. 45% Bypass Device for Turbine Scrams

No documentation was available to provide the basis for the setting (200 psig) for the 45% power bypass pressure switches which are mounted on the third stage of the high pressure turbine. Mr. Riggle stated that GE had been contacted following the last inspection in April, 1971 and that GE had informed Jersey Central that documentation would be provided to establish the basis for the setting.

17. Linkage Failure in Turbine Initial Pressure Regulator Controls

The inspectors reviewed a letter from the GE I&SE Mechanical and Nuclear group to JCP&L dated April 23, 1971. The letter discussed the inspection of the failed aluminum push-pull bar which was removed from the OC-1 bypass valve control linkages in October, 1970. The letter stated that investigation by GE showed that with the high speed of response required for the steam pressure control system, the stress level in the failed member was too high for the material, but only marginally so. The letter also stated that the failure may have been aggravated by perhaps a chain fall being hung on the member. The letter further stated that all aluminum linkages of this type (horizontal push-pull bars) have been replaced at OC-1 and all succeeding similar units.

18. Drywell Compressed Nitrogen System

JCP&L is installing a system to supply compressed nitrogen to the instrument air loads inside containment. The instrument air system will remain available and will back up the new nitrogen system.

The inspector stated during discussions with Mr. Riggle and Mr. Carroll and again during the exit interview, that a review of this nitrogen system should be made to determine if contaminants could enter into the air piping from the wearing of compressor internals or from other sources. Mr. McCluskey stated, during the exit interview, that a review would be made to determine if contaminants could enter into this system.

19. Partial Pluggage of Circulating Water Intake Structure

Discussions were held with Messrs. Reeves and Carroll and with the control room A operator on duty. Information provided was as follows:

- a. On June 17, 1971, the control room operators observed fluctuating amperage on the main circulating pump motors and an operator was dispatched to the intake structure. Sea grass was observed to be plugging the trash rack for the No. 2 inlet bay and one of the two main circulating pumps for this bay was shut down until the grass could be removed.
- b. Mr. Carroll stated that the operator's first indication of sea grass accumulation is fluctuating amperage for the main circulating pump motors, a service water pressure reduction or the alarming of the traveling screen delta P alarms. This latter alarm is not actuated when the sea grass plugs the trash racks as the traveling screens do not see a high delta P. The control room A operator was interviewed to determine if he was fully aware of these indications and it was established that he was.
- c. Mr. Carroll informed the inspectors that the action taken to cope with the sea grass problem has been to install deck grating to permit visual inspection of the condition of the trash racks and traveling screens. Modifications have also been made to the electrical controls for the traveling screen motors to permit reversal in their direction of travel. This latter modification would eliminate the failures of the shear pins in the traveling screen drives when attempts are made to advance the screens with accumulations of sea grass present. The plant staff is also reviewing other means to remove sea grass further up the inlet canal, but no definite plans or schemes have been developed to date.

20. Reactor Vessel Level Instrumentation

Discussions were held with Mr. Riggle concerning the elevation (with respect to the tap-in point on the reactor vessel) of the steam condensing pots (two) used in the reference legs for the GE/MAC level transmitters used in the feedwater control system and the low-low-low level switches used in the reactor protection system. Mr. Riggle was asked if JCP&L had plans to perform measurements to determine if the subject steam pots were "free venting". Mr. Riggle stated that he reviewed this issue as a result of the inspector's previous comments in April, 1971 and had additionally informally reviewed the issue with the GE representative and that JCP&L did not consider that there was any safety issue involved. The inspector also discussed this matter during the

exit interview and pointed out that GE's Topical Report concerning the conformance of GE's protection system to IEEE-279 criteria stipulated that the slope of the line between the steam pot and the point where the sensing line penetrates the reactor vessel should be positive (permitting free venting of noncondensable gases). Mr. McCluskey stated that further review of this matter would be undertaken by JCP&L.

21. Correction of Calendar Year 1970 Liquid Radioactive Effluents

Table 1 shows the total activity discharged from the plant. One column is that which has been reported by the licensee in semi-annual reports and which is based on a gross beta analysis of liquid effluents. A second column contains the corrected total activity which the licensee intends to report in their next semi-annual report to the AEC. The corrected totals do not include dissolved gaseous activity, i.e., xenons, which have been identified in samples of processed waste collection system water.

The basis for the correction factor of waste releases for the year 1970 (multiplying reported values by 4.1) was explained by Mr. Ross. This data was also presented to the ACRS by Mr. Ross during meetings held in conjunction with the stretch power licensing considerations.

- a. Comparison of the JCP&L gamma spectrum analysis for 1970 to a gross beta count used for the releases gave a factor of 6.2; total gamma activity/gross beta activity is equal to 6.2.
- b. Comparison of results of isotopic analysis between JCP&L and three other laboratories indicated that the JCP&L analysis results were high in all cases. JCP&L used a conservative correction factor between their gamma analysis and the outside laboratory gamma analysis of 1.5 which was applied to the 6.2 factor discussed above; $6.2/1.5$ is equal to 4.1, and the reported values for calendar year 1970 that were included in previous semi-annual reports are to be multiplied and increased by this value. The 1971 liquid radioactive waste values for total activity for the months of January - April are corrected in a similar manner. Beginning in May, 1971 all releases were being made on the basis of isotopic analysis; 18 beta gamma emitters by gamma isotopic analysis, Xe-133 and Xe-135, H-3 and Sr-90. Each batch is analyzed in this manner except that a value for Sr-90 which is estimated based on the experience from several previous sample analysis; infrequent resampling is performed to verify the Sr-90 value used.

Mr. Ross was reluctant to report an estimate for noble gases or xenons released in liquid discharges for the period prior to May, 1971. He stated it would be difficult, if not impossible, to reconstruct enough data upon which to base an accurate value.

22. Control of Activity in Outside Storage Tanks

As a result of the analysis errors in the gross beta counting technique, JCP&L exceeded the Technical Specifications limit of 0.7 Ci total activity stored in the outside storage tanks on at least one occasion prior to the April, 1971 inspection.

Review of site records disclosed that the total Curie activity has remained below the 0.7 Ci limit in the Technical Specifications since the April, 1971 inspection. Total activity is now being controlled on the basis of an isotopic analysis.

23. Rad Waste System Performance

During the last inspection, it was noted that the operation of the liquid rad waste system had resulted in substantial variances between the predicted performance as specified in the FD&SAR and the actual experience. Information provided to the inspector during this inspection disclosed that shortly after the April, 1971 inspection the waste concentrator has been employed between 16 - 18 hours per day, primarily to process floor drain liquids. Examination of site records disclosed that increases in effectiveness of the waste treatment system had begun in November, 1970 and the volumes released and total activity released had decreased since that time. The licensee informed the inspector that additional programs are underway at the facility to further reduce both the volumes and total activity released in the form of liquid waste.

24. Testing of Diesel Generator Shutdown Devices

Mr. Riggle informed the inspector that JCP&L plans to periodically test the diesel generator shutdown devices. He additionally informed the inspector that the only shutdown devices that remain in effect on emergency diesel starts are: (1) generator breaker opening and, (2) mechanical overspeed protection. The following shutdown devices were reported to be bypassed on emergency diesel starts:

- a. High engine temperature
- b. Overspeed trip (electrical switch)
- c. Low oil temperature

- d. Low oil pressure
- e. Loss of engine coolant

No actual testing has been performed (since the April, 1971 inspection) on these diesel generator shutdown devices.

25. Gaseous Releases from the Facility

JCP&L is presently converting activity measurements for the summation of six fission gases measured at the air ejector discharge to the predicted activity for all 22 fission gases present. A review of station records for 1970 disclosed that the average hold up time between the air ejector and the stack was approximately 60 minutes. The evaluation made by JCP&L to determine the significance of not correlating the measured values of the six fission gases to the 22 gases present revealed that the stack release rates had been overestimated on some occasions and underestimated on about an equal number of occasions. It was noted that the apparent maximum error, which could be experienced for a 60 minute holdup time, is on the order of 8%.

Table 1
Oyster Creek 1 Liquid Waste Releases
(Curies)

| <u>1970</u> | <u>Tritium</u> | <u>Unidentified</u> | |
|-------------|----------------|----------------------------|-------------------|
| | | <u>Previously Reported</u> | <u>Corrected*</u> |
| Jan | 2.62 | 0.283 | 1.16 |
| Feb | 1.38 | 0.424 | 1.74 |
| Mar | 2.18 | 0.196 | 0.804 |
| Apr | 1.88 | 0.185 | 0.759 |
| May | 0.87 | 0.060 | 0.246 |
| Jun | 1.42 | 0.613 | 2.51 |
| Jul | 1.89 | 0.721 | 2.96 |
| Aug | 2.55 | 0.461 | 1.89 |
| Sep | 1.99 | 0.353 | 1.45 |
| Oct | 1.72 | 0.392 | 1.61 |
| Nov | 1.93 | 0.495 | 2.03 |
| Dec | 1.41 | 0.320 | 1.31 |
| Totals | 21.84 | 4.503 | 18.469 |
| <u>1971</u> | | | |
| Jan | 1.67 | 0.354 | 1.45 |
| Feb | 2.3 | 0.518 | 1.73 |
| Mar | 2.14 | 0.952 | 2.86 |
| Apr | 1.84 | 0.918 | 0.96 |
| May | 1.31 | 0.884 | 0.884 |
| Jun | Not available | 0.44 | 0.44 |

*Exclusive of Xenons and dissolved gases.

While JCP&L still reports activity other than tritium as "unidentified", the total curies are based on results of isotopic analysis of each batch released. However, even though identification of isotopes is performed, the release of liquid radioactive waste is controlled on the basis of 1×10^{-7} uCi/ml.